CLAIMS

We claim:

1. A method of selecting delay positions for a RAKE receiver, comprising:

searching a plurality of multi-paths to select a set of multi-path delays associated with the highest signal to interference ratios (SIRs) and/or power values while maintaining a minimum distance between the multi-path delays during a first time interval;

determining respective SIRs and/or power values associated with the respective multi-path delays during a second time interval;

filtering the respective SIRs and/or power values based on the SIRs and/or power values obtained during searching the plurality of multi-paths and determining respective SIRs and/or power values;

for each of the respective multi-path delays, comparing the respective filtered SIR and/or power value associated with the respective multi-path delay with the SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay;

for each of the respective multi-path delays, adjusting a respective multi-path delay position based on comparing the respective filtered SIR and/or power value associated with the respective multi-path delay with the filtered SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay; and

assigning the respective multi-path delay positions to fingers of a RAKE receiver.

2. The method of Claim 1, wherein filtering the respective SIRs and/or power values comprises:

for each of the respective multi-path delays:

multiplying the SIR and/or power value obtained during the first time interval by a scaling factor X to obtain a first product;

multiplying the SIR and/or power value obtained during the second time interval by (1-X) to obtain a second product; and

adding the first and second products to obtain a filtered SIR and/or power value.

3. The method of Claim 1, wherein comparing the respective filtered SIR and/or power value associated with the respective multi-path delay with the filtered SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay comprises:

multiplying the filtered SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay by a scaling factor that is between 0 and 1; and

determining if the respective filtered SIR and/or power value is greater than the scaled filtered SIRs and/or power values associated with the delays immediately adjacent to the respective multi-path delay.

4. The method of Claim 3, wherein adjusting the respective multi-path delay position comprises:

adjusting the respective multi-path delay position if the respective filtered SIR and/or power value for the respective multi-path delay is not greater than at least one of the scaled filtered SIRs and/or power values associated with the delays immediately adjacent to the respective multi-path delay.

5. The method of Claim 4, wherein adjusting the respective multi-path delay position comprises:

determining a number N of multi-path delays between the respective multi-path delay and one of the multi-path delays for which an adjusting decision has been previously made; and

adjusting the respective multi-path delay position of the respective multi-path delay to ensure that the respective multi-path delay and the one of the multi-path delays for which an adjusting decision has previously been made are separated by at least a distance of N * the minimum distance between the multi-path delays.

6. The method of Claim 4, further comprising:

scaling the filtered SIR and/or power value for the respective multi-path delay to reduce the filtered SIR and/or power value at a previous multi-path delay position after adjusting the respective multi-path delay position if the respective filtered SIR and/or power value for the respective multi-path delay is not greater than the scaled filtered SIRs and/or power values associated with the delays immediately adjacent to the respective multi-path delay.

7. A system for selecting delay positions for a RAKE receiver, comprising:

means for searching a plurality of multi-paths to select a set of multi-path delays associated with the highest signal to interference ratios (SIRs) and/or power values while maintaining a minimum distance between the multi-path delays during a first time interval;

means for determining respective SIRs and/or power values associated with the respective multi-path delays during a second time interval;

means for filtering the respective SIRs and/or power values based on the SIRs and/or power values obtained during searching the plurality of multi-paths and determining respective SIRs and/or power values;

for each of the respective multi-path delays, means for comparing the respective filtered SIR and/or power value associated with the respective multi-path delay with the SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay;

for each of the respective multi-path delays, means for adjusting a respective multi-path delay position based on comparing the respective filtered SIR and/or power value associated with the respective multi-path delay with the filtered SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay; and

means for assigning the respective multi-path delay positions to fingers of a RAKE receiver.

8. The system of Claim 7, wherein the means for filtering the respective SIRs and/or power values comprises:

for each of the respective multi-path delays:

means for multiplying the SIR and/or power value obtained during the first time interval by a scaling factor X to obtain a first product;

means for multiplying the SIR and/or power value obtained during the second time interval by (1-X) to obtain a second product; and

means for adding the first and second products to obtain a filtered SIR and/or power value.

9. The system of Claim 7, wherein the means for comparing the respective filtered SIR and/or power value associated with the respective multi-path delay with the filtered SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay comprises:

means for multiplying the filtered SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay by a scaling factor that is between 0 and 1; and

means for determining if the respective filtered SIR and/or power value is greater than the scaled filtered SIRs and/or power values associated with the delays immediately adjacent to the respective multi-path delay.

10. The system of Claim 9, wherein the means for adjusting the respective multi-path delay position comprises:

means for adjusting the respective multi-path delay position if the respective filtered SIR and/or power value for the respective multi-path delay is not greater than at least one of the scaled filtered SIRs and/or power values associated with the delays immediately adjacent to the respective multi-path delay.

11. The system of Claim 10, wherein the means for adjusting the respective multi-path delay position comprises:

means for determining a number N of multi-path delays between the respective multi-path delay and one of the multi-path delays for which an adjusting decision has been previously made; and

means for adjusting the respective multi-path delay position of the respective multi-path delay to ensure that the respective multi-path delay and the one of the multi-path delays for which an adjusting decision has previously been made are

separated by at least a distance of N * the minimum distance between the multi-path delays.

12. The system of Claim 10, further comprising:

means for scaling the filtered SIR and/or power value for the respective multi-path delay to reduce the filtered SIR and/or power value at a previous multi-path delay position after adjusting the respective multi-path delay position if the respective filtered SIR and/or power value for the respective multi-path delay is not greater than the scaled filtered SIRs and/or power values associated with the delays immediately adjacent to the respective multi-path delay.

13. A computer program product for selecting delay positions for a RAKE receiver, comprising:

a computer readable storage medium having computer readable program code embodied therein, the computer readable program code comprising:

computer readable program code configured to search a plurality of multi-paths to select a set of multi-path delays associated with the highest signal to interference ratios (SIRs) and/or power values while maintaining a minimum distance between the multi-path delays during a first time interval;

computer readable program code configured to determine respective SIRs and/or power values associated with the respective multi-path delays during a second time interval;

computer readable program code configured to filter the respective SIRs and/or power values based on the SIRs and/or power values obtained during searching the plurality of multi-paths and determining respective SIRs and/or power values;

for each of the respective multi-path delays, computer readable program code configured to compare the respective filtered SIR and/or power value associated with the respective multi-path delay with the SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay;

for each of the respective multi-path delays, computer readable program code configured to adjust a respective multi-path delay position based on comparing the respective filtered SIR and/or power value associated with the respective multi-path

delay with the filtered SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay; and

computer readable program code configured to assign the respective multi-path delay positions to fingers of a RAKE receiver.

14. The computer program product of Claim 13, wherein the computer readable program code configured to filter the respective SIRs and/or power values comprises:

for each of the respective multi-path delays:

computer readable program code configured to multiply the SIR and/or power value obtained during the first time interval by a scaling factor X to obtain a first product;

computer readable program code configured to multiply the SIR and/or power value obtained during the second time interval by (1-X) to obtain a second product; and

computer readable program code configured to add the first and second products to obtain a filtered SIR and/or power value.

15. The computer program product of Claim 13, wherein the computer readable program code configured to compare the respective filtered SIR and/or power value associated with the respective multi-path delay with the filtered SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay comprises:

computer readable program code configured to multiply the filtered SIRs and/or power values associated with delays immediately adjacent to the respective multi-path delay by a scaling factor that is between 0 and 1; and

computer readable program code configured to determine if the respective filtered SIR and/or power value is greater than the scaled filtered SIRs and/or power values associated with the delays immediately adjacent to the respective multi-path delay.

16. The computer program product of Claim 15, wherein the computer readable program code configured to adjust the respective multi-path delay position comprises:

computer readable program code configured to adjust the respective multi-path delay position if the respective filtered SIR and/or power value for the respective multi-path delay is not greater than at least one of the scaled filtered SIRs and/or power values associated with the delays immediately adjacent to the respective multi-path delay.

17. The computer program product of Claim 16, wherein the computer readable program code configured to adjust the respective multi-path delay position comprises:

computer readable program code configured to determine a number N of multi-path delays between the respective multi-path delay and one of the multi-path delays for which an adjusting decision has been previously made; and

computer readable program code configured to adjust the respective multi-path delay position of the respective multi-path delay to ensure that the respective multi-path delay and the one of the multi-path delays for which an adjusting decision has previously been made are separated by at least a distance of N * the minimum distance between the multi-path delays.

18. The computer program product of Claim 16, further comprising:

computer readable program code configured to scale the filtered SIR and/or power value for the respective multi-path delay to reduce the filtered SIR and/or power value at a previous multi-path delay position after adjusting the respective multi-path delay position if the respective filtered SIR and/or power value for the respective multi-path delay is not greater than the scaled filtered SIRs and/or power values associated with the delays immediately adjacent to the respective multi-path delay.